Appl. No. 10/712,031
Amendment dated May 13, 2005
Reply to Office Action of March 18, 2005

TSM-34

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims:

1. (Currently Amended) A storage system comprising:

an interface unit connected to a host computer;

a first controller which processes a file operation;

a second controller which processes the read/write of data for a storage; and

an internal network which accesses said interface unit, said first controller and said second controller mutually,

wherein said interface unit selects from one of said first controller and said second controller, a transfer destination of a frame transmitted from said host computer, from one of said first controller and said second controller, and transfers said frame through said internal network to the selected controller

said storage system further comprising a control memory having first management information which reduces the processing load of said first controller and said internal network by indicating cooperation between said first controller and said interface unit and said second controller such that data from said host computer can be transmitted directly to said storage via said interface unit and/or said second controller.

2. (Original) A storage system according to Claim 1,

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wherein said first controller executes the read/write of the data for said

storage through said second controller, in case it receives said frame from said

interface unit and executes the file operation designated by said frame.

3. (Original) A storage system according to Claim 2, further comprising a second

interface unit connected to another storage,

wherein said interface unit selects the transfer destination of said frame from

said first controller, said second controller or said second interface unit.

4. (Original) A storage system according to Claim 3,

wherein said first controller executes the read/write of the data for said

another storage through said second interface unit, in case it receives said frame

from said interface unit and executes the file operation designated by said frame.

5. (Original) A storage system according to Claim 1, further comprising a plurality of

said first controllers,

wherein said interface unit selects a predetermined first controller from said

plurality of first controllers and transmits said frame through said internal network to

said selected first controller, in case said frame is a frame containing a command

requesting a file operation.

6. (Currently Amended) A storage system according to Claim 5, wherein

said interface unit holds the information on the corresponding relation

between said plurality of first controllers and an identifier contained in the frame

received from said host computer, and decides the first controller, to which said

frame is to be transferred, on the basis of said information when said frame is

received.

7. (Original) A storage system according to Claim 1, wherein,

according to the instruction of said first controller having received said frame,

said interface unit and said second controller transmit/receive the data on the

processing of said first controller through said internal network.

8. (Original) A storage system according to Claim 4, wherein,

according to the instruction of said first controller having received said frame,

said interface unit and said second interface unit transmit/receive the data on the

processing of said first controller through said internal network.

9. (Original) A storage system according to Claim 6, wherein

said information contains the information indicating that said plurality of first

controllers correspond to one port belonging to said interface unit for receiving said

frame.

10. (Original) A storage system according to Claim 1, further comprising a plurality

of said interface units, wherein

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the frame received by said plurality of interface units is transferred to said first

controller.

11. (Currently Amended) A storage system according to Claim 9, further comprising

a management unit, wherein

said interface unit ~~reconfigurates~~ reconfigures the contents of said information

and changes the transfer destination of said frame in accordance with the instruction

of said management unit.

12. (Currently Amended) A storage system according to Claim 11, further

comprising:

a plurality of said interface units,

_____wherein said plurality of said interface units includes an alternate interface unit

which; and

——————means which inherites inherits the processing executed in said interface unit

to another of said interface units in accordance with the instruction of said

management unit.

13. (Original) A storage system according to Claim 12, wherein

the instruction of said management unit is made when the failure of said

interface unit is detected by each device belonging to said storage, and

said management unit has the information of said another interface unit

inheriting the processing at the time of a failure of said interface unit.

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14. (Currently Amended) A storage system according to Claim 12, further

comprising:

a plurality of said first controllers,

_____ wherein said plurality of first controllers includes an alternate first controller

which; and

————means which inherites inherits the processing executed in said first controller

to another of said first controllers in accordance with the instruction of said

management unit.

15. (Original) A storage system according to Claim 14, wherein

the instruction of said management unit is made when the failure of said first

controller is detected by each device belonging to said storage, and

said management unit has the information of said another first controller

inheriting the processing at the time of a failure of said first controller.

16. (Original) A storage system according to Claim 4, wherein

said second controller controls said another storage through said second

interface unit.

17. (Original) A storage system according to Claim 1, wherein

said second controller has a cache memory and a disk device.

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18. (Currently Amended) A storage system comprising:

an interface unit connected to a host computer;

a controller which processes a file operation;

a second interface unit which processes the read/write of data for a storage; and

an internal network which accesses said interface unit, said second interface unit and said controller mutually,

wherein said interface unit selects from one of said controller and said second interface unit, a transfer destination of a frame transmitted from said host computer, from one of said controller and said second interface unit, and transfers said frame through said internal network to the selected controller or said second interface unit

said storage system further comprising a control memory having first management information which reduces the processing load of said controller and said internal network by indicating cooperation between said first interface unit, said second interface unit and said controller such that data from said host computer can be transmitted directly to said storage via said interface unit and/or said second interface unit without passing through the controller.

19. (New) A storage system according to claim 1, wherein said first management information includes information indicating an alternate first controller in the event of a failure in said first controller, said alternate first controller receiving relevant information of said first controller so as to be able to take over processing for said first controller.

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20. (New) A storage system according to claim 19, said relevant information of said first controller including a list of IP addresses for designating a transmission destination by said host computer, wherein if the list of IP addresses includes more than one IP address, then said first controller appears as a plurality of first controllers to said host computer.

21. (New) A storage system according to claim 1, wherein said control memory has second management information for managing said interface unit such that if one port of said interface unit fails, an alternate port specified in said second management unit inherits processing for said failed port.

22. (New) A storage system according to claim 20, wherein said control memory has second management information for managing said interface unit such that if one port of said interface unit fails, an alternate port specified in said second management unit inherits processing for said failed port.